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 TCTTGACATGATTTGACTTGTCCGGTCCGCGCGACACACGATGTT 6075
 GATCATAATGAAGGAGTGTTGATTTTGAGTAGGAAAAGATATTGC 6120
 AGTTCCTTGTAAGATCGTTCGGAACGAAACCCGGCTGGAGTATG 6165
 ATTTGTTTCGTGGACCCGAAGTGCAAAAATGCCGGAATTAATGACA 6210
 GGCATTCTCTTCAGTTGGCTTGGGTTGAGATATTGGTCTGCGTCT 6255
 GTTGGAAGCTGACATTGGATCTTCAACATGCTTTTGCCGCGACC 6300
 CAGATGGTTGCGCATAAGGCAGCGCTGACTCCCGAGTATGCGAAA 6345
 ACCTCGAGCCACGAAACATCAGGGTCCATTTCCGTTGAGTCGATC 6390
 AATTTAGCGGCTGCGAGCATCTTGAGAGTTTTGGGATAAGTCTTT 6435
 GAGTGGACAACAGTAATGTGATATGGTATGATCTGATGTCGTGTT 6480
 CGTGTTGATGAGAATAAATTGTTGAGCTGATTCCCATCGGCTCTG 6525
 ACCAACAGTTAATATCTAAATTCTTCTACTATCTATGCACTATGG 6570
 ACTGGGGAGTCAACGTTGTTTCGTTCTCTGGAGAGAGGCCTAAATG 6615
 ATCTTGAATTGGTGTGTAACGTAACGTCAGTAGAAGGCCTGAAT 6660
 TCGCAAGCGCCGAACCTCCGGCCTACACTGCCACTGACTTTGCGG 6705
 CTCAGCATTTAGATAGTGGGCTTCACAGCGGGTATTGTCTCTTCT 6750
 GCAGCATTGCTACGGATTTATCGGCTTCAACAACCCTTGCTGAAC 6795
 CAATGATGGGTACATTGATGGGCATTCGTTTTTAACTTTTGTC 6840
 AGGTTGGCAGAGGCCTAAATCTGCCGTCGGTGTGTGAGAGACCA 6885
 TGAATCAGGCCCTGCATTAATGTAGGGCATTGCTAGCCCGCGG 6930
 CAAGAGCGCAGAAAGC 6946

Fig. 2E

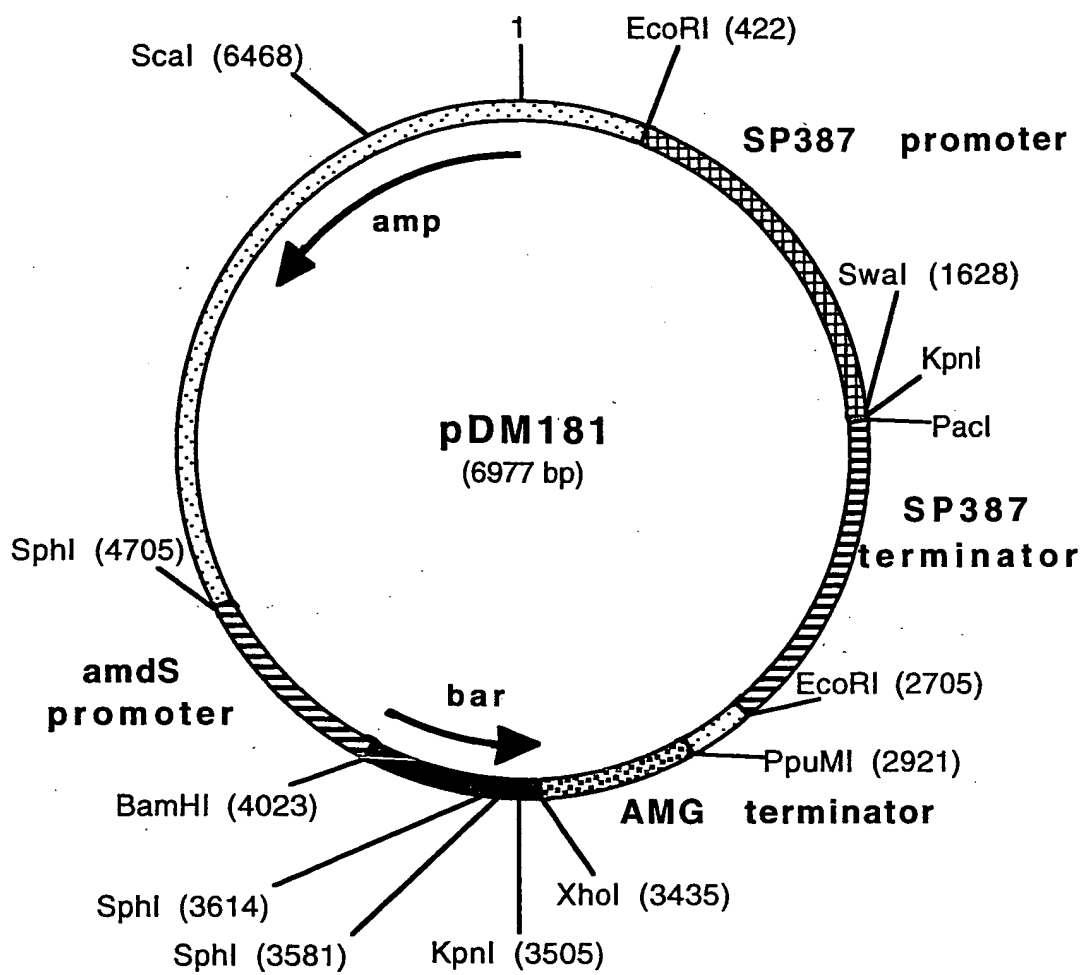


Fig. 3

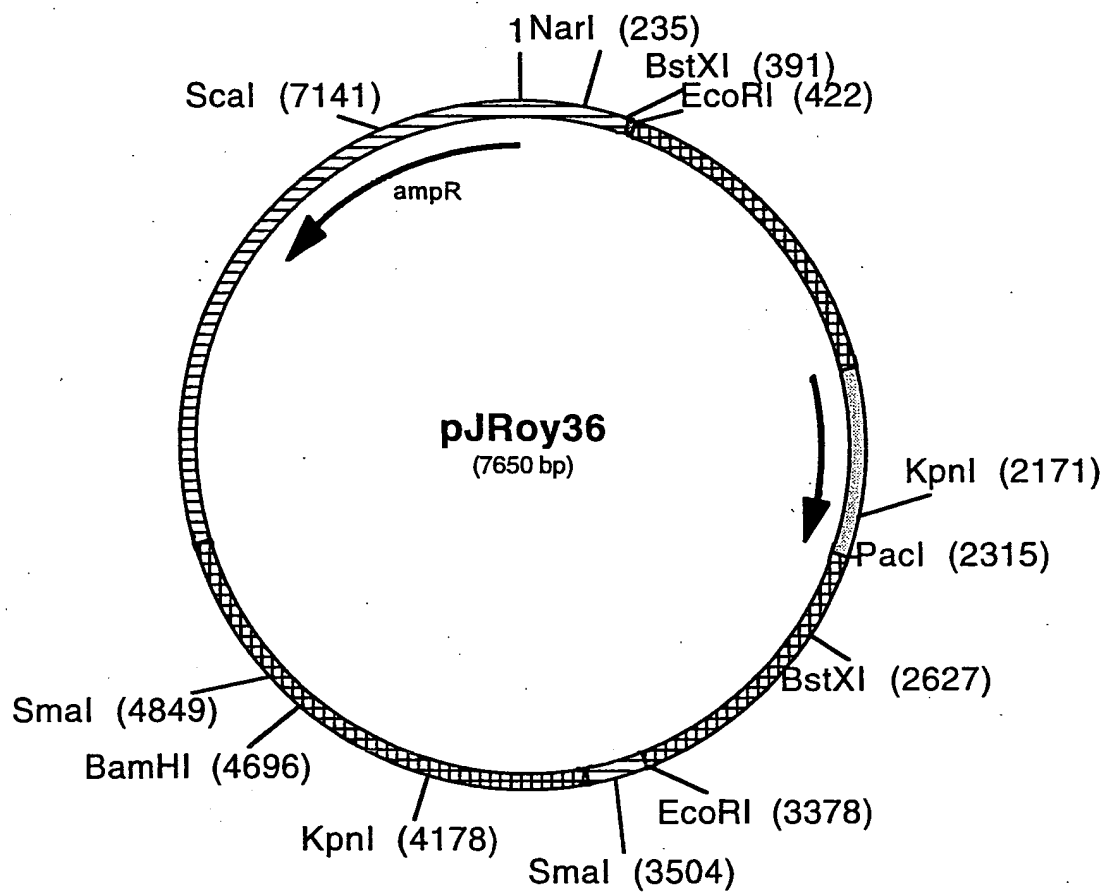


Fig. 4

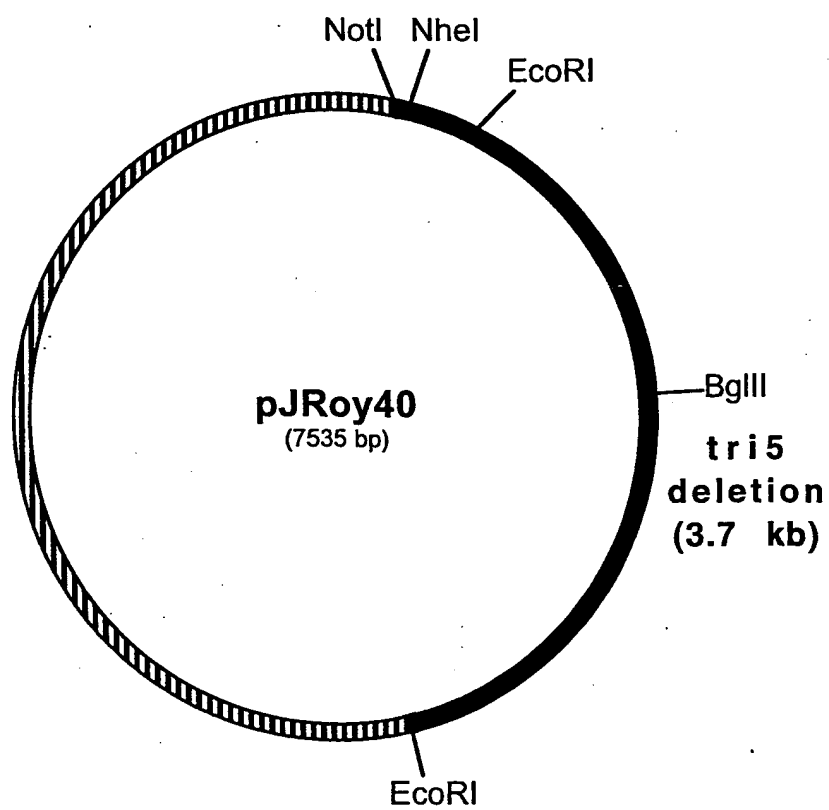


Fig. 5

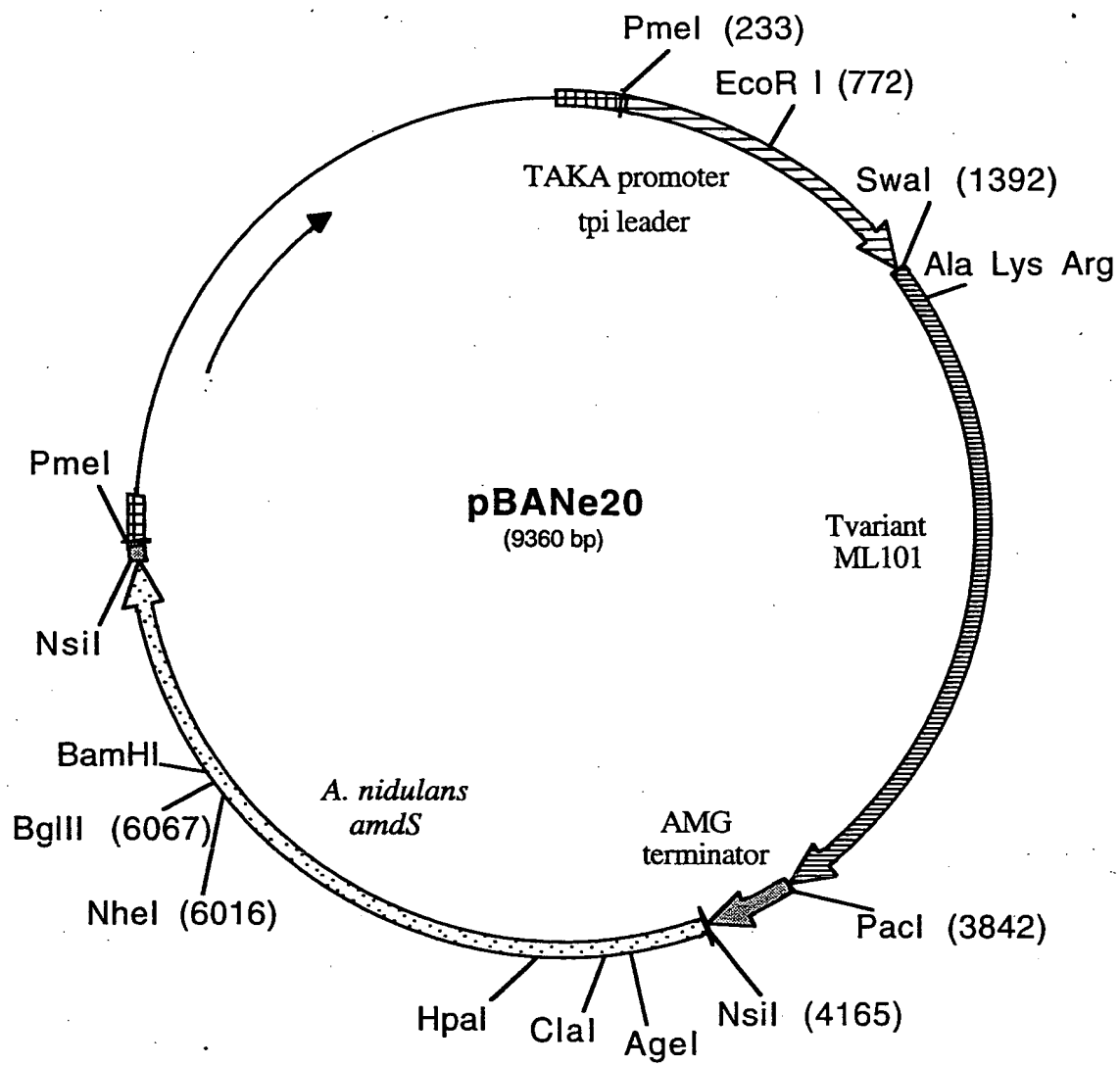


Fig. 6

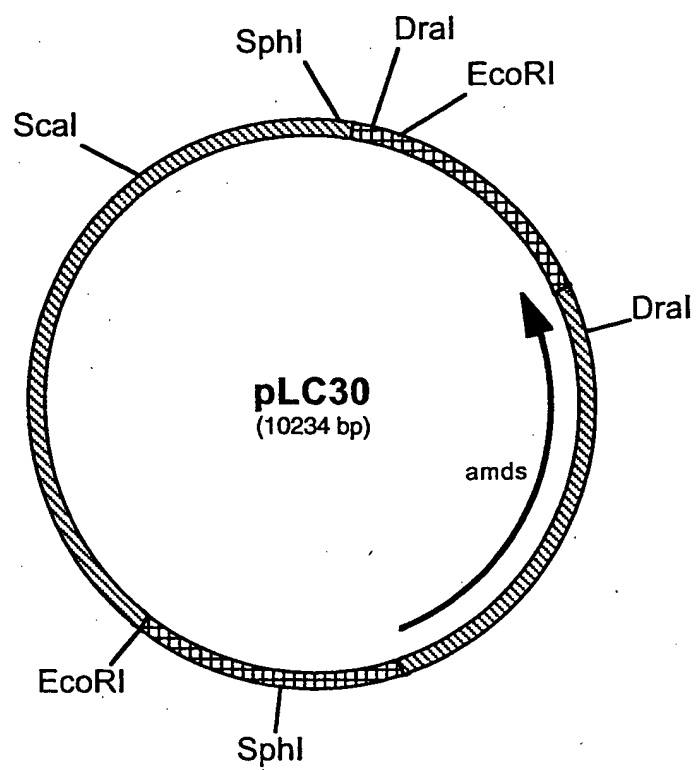


Fig. 7

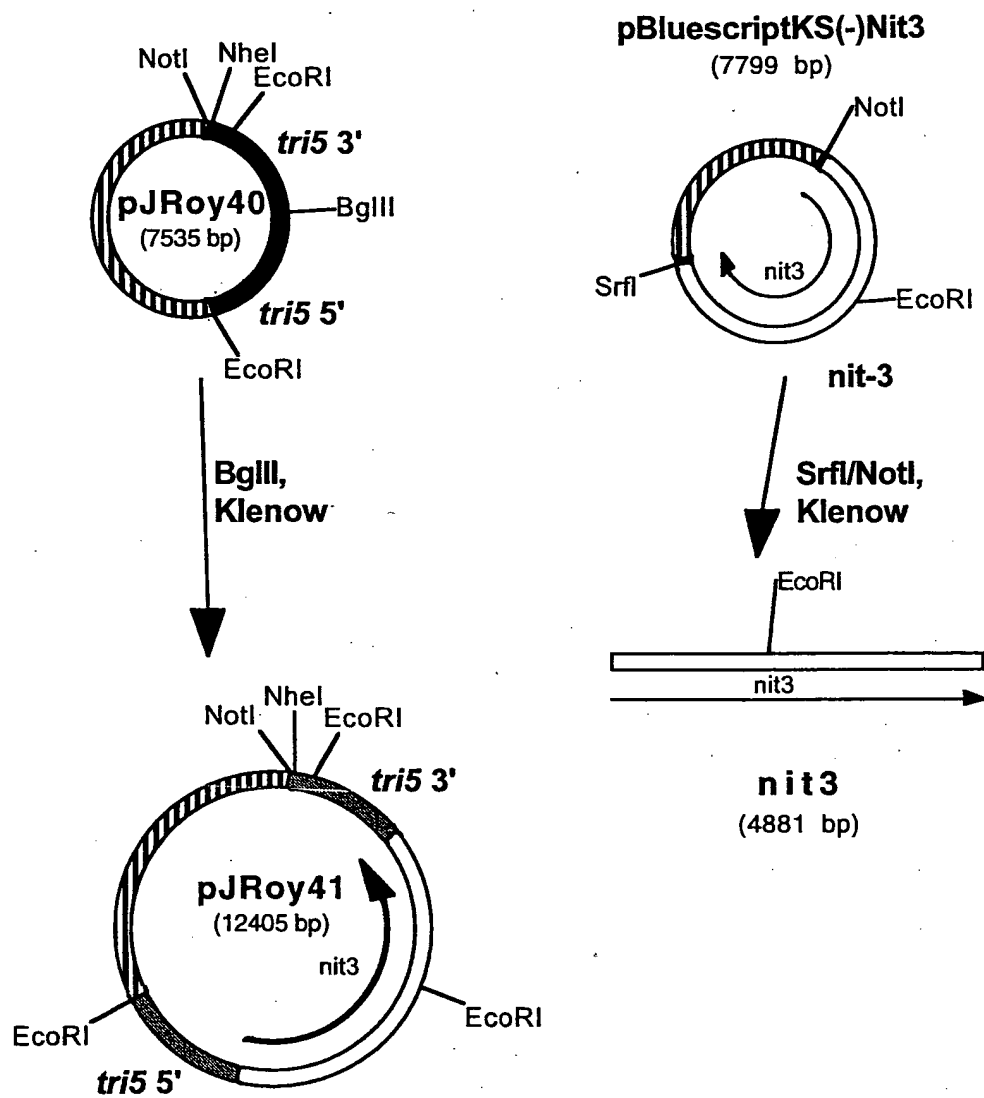
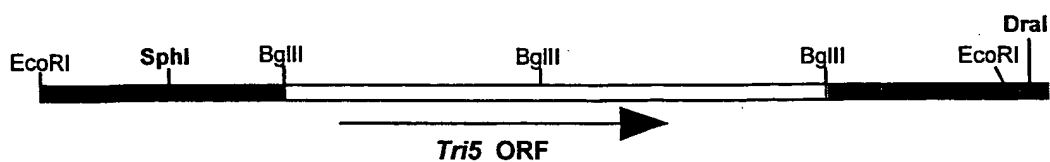
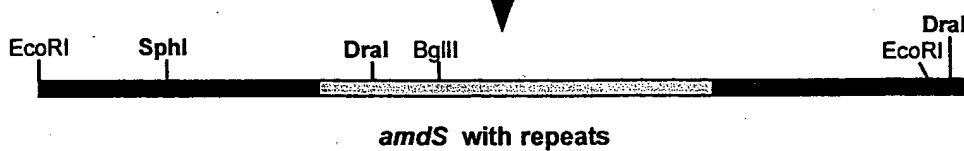


Fig. 8

Wild type *tri5* region



tri5 deletion and replacement
with the *amdS* marker



amdS loop-out



deletion with single repeat

Fig. 9

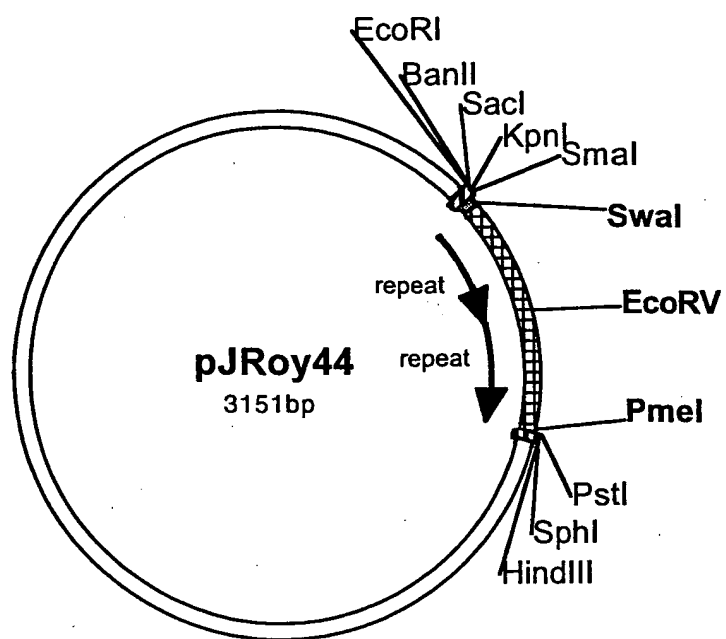


Fig. 10

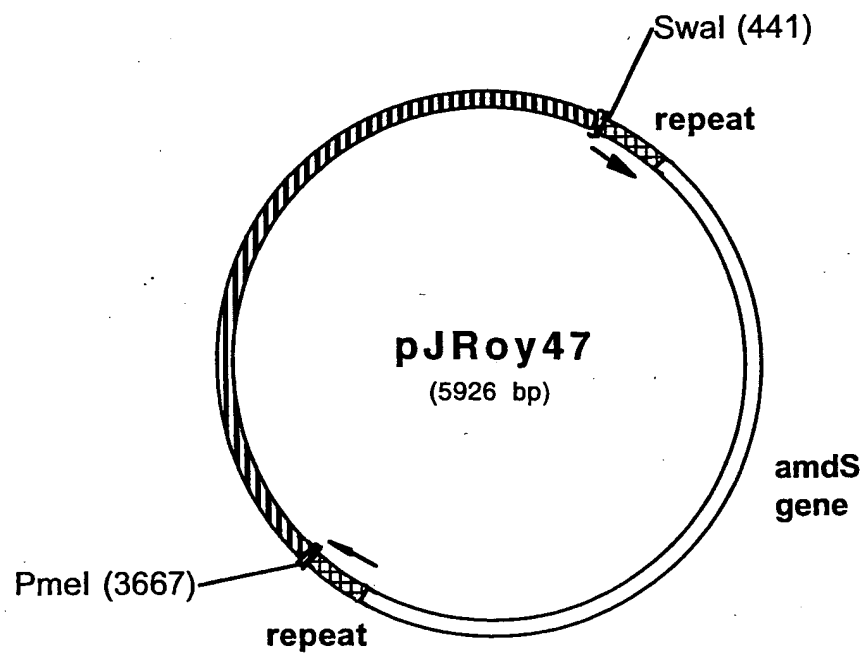


Fig. 11

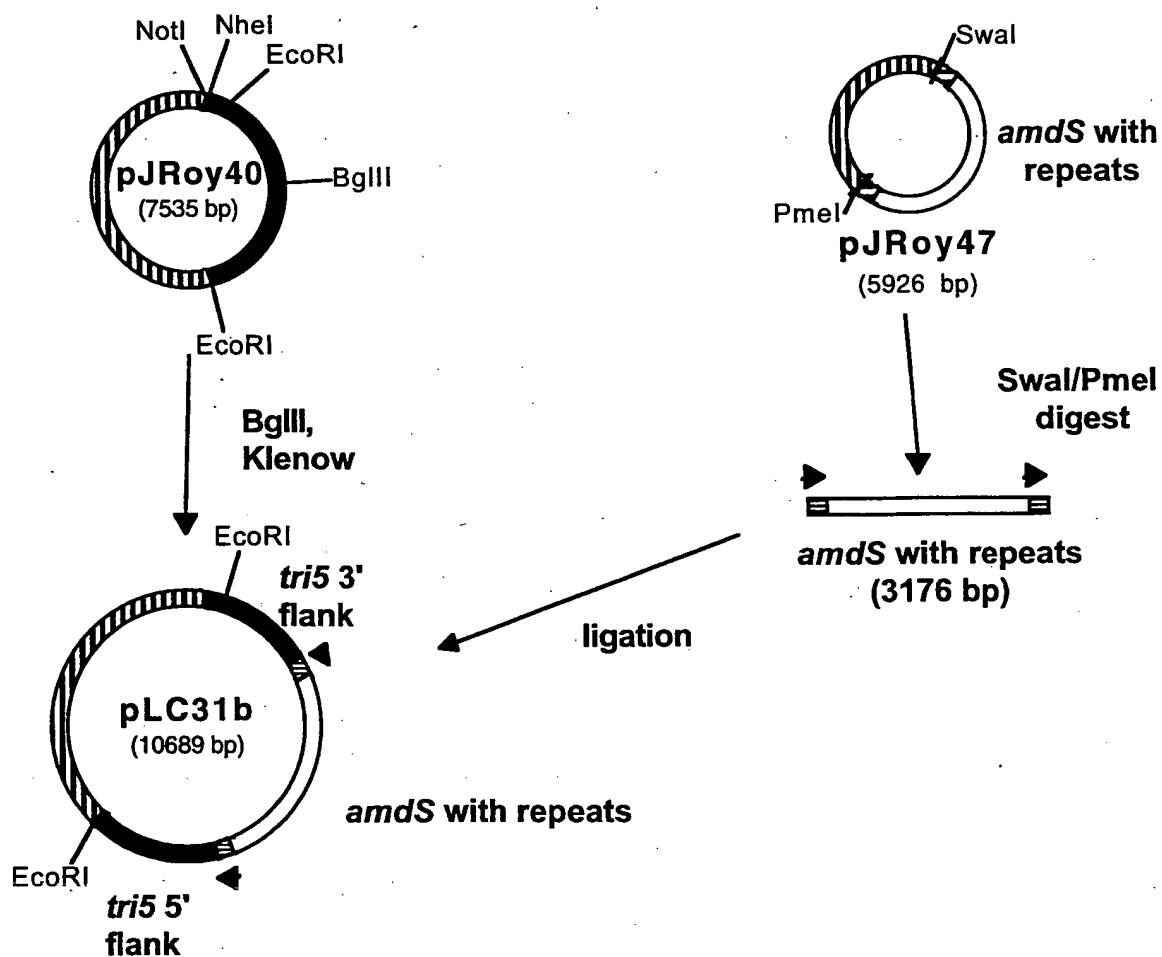


Fig. 12

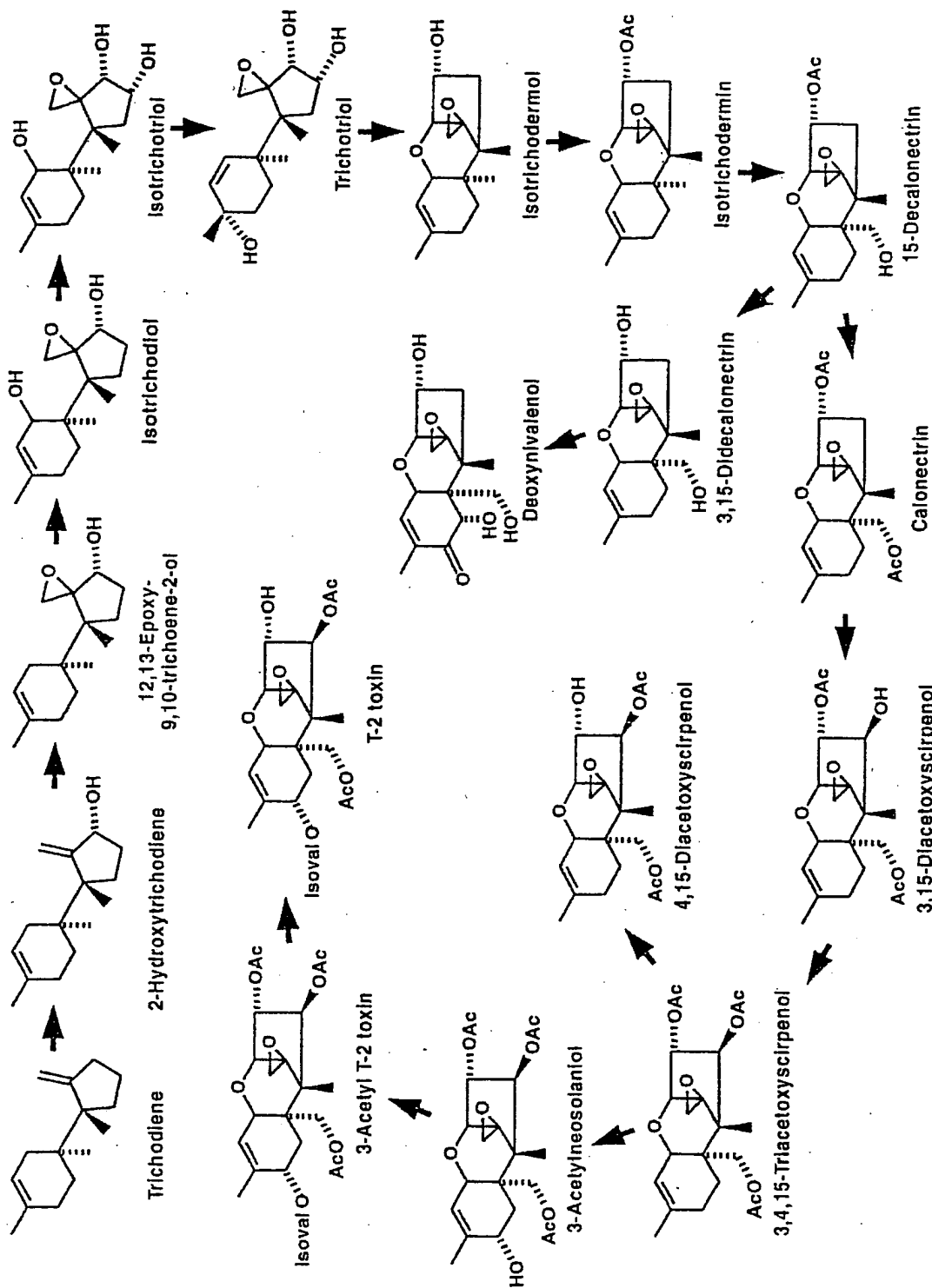


Fig. 1

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TATGGATGTAATAAAACAAATGTTCCGACCTATTATGCCGAGTTAC 180
CGTGGACAATTATCGGGCCGGAAGAATGCATTTGTGAATTGTA 225
ATCCTGCCTGTTTGTGGAGTGATAAGTGACATATTGGAAAAGTCG 270
TCAAGCAATTGGAGGTTTCATCAACTGTGGAGTCATCGTTTTGGG 315
CAAACAATACTATGTAGGGTAGGCTTCTGCTGCAGCATCAATGAC 360
TCGTTTGGATCGAGTCCTTTTGTGTCGAAGCGTATGGGGCCTGC 405
AGGGAACGAGTCAGTCGTATCAGGCCGGTGAGGCAAATGCCGTTT 450
CGCAGCAGCTATCATTTGTGCGGGATTTTCGCGAAGCTTTGCGT 495
GACGAGTCAAATCCGCACATCTTGATTTCATGAGTTGTTGAATTTA 540
GCTGTTTCATTTCGTGAGTGGCTAAAGCGTATCTAGTCGATTGTCAA 585
ATTCAGACTTGACAGGTCCCTTGATGAATGAGACGTCGGATGTCC 630
CTAGCCGAGATGCGGATTGTGACAACGGAAGAGACAGGGGCAGGG 675
TTCATGGGTGTTGAACCTTGTTCACTGAAACGGTGATGTCTTTGG 720
TCTACAAAGTATCCTTCACATGTCTCTGTTCCCAGACCACGTGGT 765
TATTCTGGCATCCGGGTCCTATTGATTGGCTGATTTCTTGCACTG 810
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GCCGACAAGGGGAAATCATTCTGAATTAGTGATGAAGCATGCCGT 900
CGAAGCCGAAGAGAACTTTGCGCAGCAACTGGAAAGACCTGTGG 945
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CTACATAAACAGTCTGAGTCCTGATAGTGGATATTATATCTTCCA 1080
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ATTTGCTAGTGCGACGGGACTTGCCAGGCTTACGGCACCTACAAG 1260
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TACATACGCAGCTTTTCAAGGCACAGATAACGAAGATCTTAGGGTAG 1710
ATTCCAAAACATCGGAAGGGGTCACAGATCGCACTAGCTACTATG 1755
CCATCCAGAGCCTCTTGCTAACCAAACAGAGCTAAGTCGCTTAAC 1800

Fig. 2A

CCTTATTCAAAGAACACAGTTGTATTGTGCATCCGGGATCTAACT 1845
GTCTTGACAAAGCGTGTCTGTATCCGTAACGGCTGGTGGTTTTG 1890
TAGGGTATGATAGAATGGTTGCACTTAAGGCCTGTCGACTAGGTA 1935
AGCTTTTCCCAGGGAAGAATAAAACACCGCGGCTGCTTAGACAAG 1980
TGAGGCTTTCTTCTCCGTCAACAACTGCCGTCTCACTAGTCCAA 2025
ACTTGGTCACGGACAACAGCCGAACCTCAAACATTTAGCCTCAGGA 2070
TTCATCCCTAGCTTTAGGCCTACTCCTCGTCCCTTGACACCGGGA 2115
TGTAGTTCCTATCGCTTGCGTAGCTCTTTACTGCATGTGCCGAGC 2160
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TTCTCAAGCTCGTCGTGTTGCAGGGGATGGAAGACCTCCAGCGTA 2250
CGTCACGGTCTCTATCACTACGAATTTGCTGGGAAGGCTATTTGC 2295
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AAAGATTGTGGATGGTTGACATTTGCCATATGTTGATATATAGTT 2385
GATAGCAACAGCACTTTGCAATAGGACAATAATAGCGACTTGACT 2430
TGAAAATTCGCAAAGAACTGTTATAAATCATTATAACCATTATCAT 2475
CATGGAGAACTTTCCCACTGAGTATTTTCTCAACACTTCTGTGCG 2520
M E N F P T E Y F L N T S V R
CCTTCTCGAGTACATTTCGATACCGAGATAGCAATTATACCCGGGA 2565
L L E Y I R Y R D S N Y T R E
AGAGCGTATCGAGAATTTGCACTATGCTTACAACAAGGCTGCTCA 2610
E R I E N L H Y A Y N K A A H
TCACTTTGCTCAGCCACGACAACAGCAGCTGCTCAAGGTAGACCC 2655
H F A Q P R Q Q Q L L K V D P
TAAGCGACTACAGGCTTCCCTCCAACTATTGTTGGCATGGTGGT 2700
K R L Q A S L Q T I V G M V V
ATACAGTTGGGCAAAGGTCTCCAAAGAGTGTATGGCGGATCTATC 2745
Y S W A K V S K E C M A D L S
TATTCATTACACGTACACACTCGTTTTTGATGACAGCAGCGATGA 2790
I H Y T Y T L V L D D S S D D
TCCGTATCCAGCCATGATGAACTATTTCAACGATCTTCAGGCTGG 2835
P Y P A M M N Y F N D L Q A G
ACGAGAACAGGCCACCCATGGTGGGCGCTTGTTAATGAGCACTT 2880
R E Q A H P W W A L V N E H F
TCCCAATGTCCTTCGACATTTTGGTCCCTTCTGCTCATTGAACCT 2925
P N V L R H F G P F C S L N L
TATCCGCAGCACTCTTGACTGTAAGTACCCTGGCTCTATTATTTC 2970
I R S T L D
ACCGCCTTAATAAGCTAACAGTGATGGAATTATAGTTTTTGAGGG 3015
F F E G

Fig. 2B

ATGCTGGATCGAGCAGTACAACCTTTGGAGGATTTCCAGGATCTCA 3060
 C W I E Q Y N F G G F P G S H
 TGACTATCCTCAGTTTCTTCGACGCATGAATGGCTTGGGTCACTG 3105
 D Y P Q F L R R M N G L G H C
 TGTCTGGGGCTTCTTTGTGGCCCAAAGAGCAGTTTGATGAGAGAGG 3150
 V G A S L W P K E Q F D E R G
 TCTATTCCTTGAAATCACATCAGCCATTGCTCAGATGGAGAACTG 3195
 L F L E I T S A I A Q M E N W
 GATGGTCTGGGTCAATGATCTCATGTCTTTCTACAAGGAGTTCTGA 3240
 M V W V N D L M S F Y K E F D
 TGATGAGCGTGACCAGATCAGTCTCGTCAAGAACTACGTCGTCTC 3285
 D E R D Q I S L V K N Y V V S
 TGATGAGATCACTCTCCACGAAGCTTTAGAGAAGCTCACCCAGGA 3330
 D E I T L H E A L E K L T Q D
 CACTCTACACTCGTCCAAGCAGATGGTAGCTGTCTTCTCTGACAA 3375
 T L H S S K Q M V A V F S D K
 GGACCCCTCAGGTGATGGACACGATTGAGTGCTTCATGCACGGCTA 3420
 D P Q V M D T I E C F M H G Y
 TGTACGTGGCACTTGTGCGATCACAGGTACCGTCTGAATGAGAT 3465
 V T W H L C D H R Y R L N E I
 CTACGAAAAGGTCAAAGGACAAAAGACCGAGGACGCTCAGAAGTT 3510
 Y E K V K G Q K T E D A Q K F
 CTGCAAGTTCTATGAGCAGGCTGCTAACGTCCGAGCCGTTTCGCC 3555
 C K F Y E Q A A N V G A V S P
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 S E W A Y P P I A Q L A N I R
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 S K D V K D V K D V K E I Q K
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 P L L S S I E L V E .
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 TCAAAACGCTTGCAATTTGCTCTATATGGCCGGCCTTGATCCTTGT 4095
 ATATTTTCACCATCTGACATTTTCTGCACAAGGCGTACAGAAACC 4140

Fig. 2C

ACACGAGGTAAAGTTTCATGGCCGCTTGGCCACTATTGGAAACAC 4185
GACACACATGTAAACTCTATCCTTGCATTATATTGTAACATCGC 4230
CTAACATCTCCACGCACTATTCCCTTTGCGTTCCTTATTCATCCTC 4275
AACTGTATGCCAACCAACAATCATCAAATTATTATTGCAGTTAGT 4320
CATCATGGATTTCCCAAAGCCGAGGCAGGTTAGAGAGACGAGCCT 4365
GTTGATGTACTACCTGGACGTCGTGTTTTCTCTACAATGCATTAC 4410
CCCAAACAACAATTGTCTGGGCAAGAGAGAGTGGCTGTTGACTAT 4455
ACTAACCTCTGCTCGGCCTACGTACTATGCAACATTGTGCCTGGC 4500
CCTCCTTTATAAAGAATCCCTCTCAAGCCCTTGCAGAGCCGAACA 4545
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CAAGATATGATTTTCGATGAGAGGGAAGAGCGAACAACCTATTCACA 5895
TGTAACCTTAAATTATAGACTTTCAGTATAAACTTTTCGATTATAAG 5940

Fig. 2D